

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

RYAN CREEK MIGRATION BARRIER REMOVAL PROJECT MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION MITIGATION MONITORING & REPORTING PROGRAM

1. MITIGATION MEASURES, TIMING, AND RESPONSIBLE AGENCIES

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
I.	MEASURES TO MINIMIZE DISTURBANCE FROM INSTREAM CONSTRUCTION		
I.1	Construction should be between July 15 th and October 15 th . Construct during the dry season if the channel is seasonally dry. This construction season may be extended or initiated sooner if warranted by low flow conditions and approved by permitting agencies.	During Construction	Mendocino County Department Of Transportation is responsible for monitoring & enforcing all of the below listed mitigation measures except where noted
I. 2	Prevent any construction debris from falling into the stream channel. Any material that does fall into a stream during construction should be immediately removed in a manner that has minimum impact to the streambed and water quality.	During Construction	
I.3	Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.	During Construction	
I.4	Temporary fill should be removed in its entirety prior to October 15 th .	Post Construction	
I.5	Areas for fuel storage, refueling, and servicing of construction equipment shall be located in an upland location.	Pre, During & Post Any Construction Activity	
I. 6	Prior to use, clean all equipment to remove external oil, grease, dirt, or mud. Wash sites should be located in upland locations so that dirty wash water does not flow into stream channel or wetlands.	Pre, During & Post Any Construction Activity	
I. 7	All construction equipment should be in good working condition showing no signs of fuel or oil leaks.	Pre & During Construction Activity	
I.8	Petroleum products, fresh cement, or deleterious materials should not enter the stream channel.	Pre, During & Post Any Construction Activity	
I.9	Operators should have spill clean-up supplies on site and be knowledgeable in their proper use and deployment.	During Construction	
I.10	In the event that a spill, operators should immediately cease work, start clean-up, and notify the appropriate authorities.	During Construction	
II.	MEASURES TO MINIMIZE DEGRADATION OF WATER QUALITY	During Construction	
II.1	Isolate the construction area from flowing water until project materials are	Pre, During & Post Any	

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
	installed and erosion protection is in place.	Construction Activity	
II.2	Erosion control measures should be in-place at all times during construction. Do not start construction until all temporary control devices (straw bales, silt fences, etc.) are in place downslope or downstream of project site.	Pre, During & Post Any Construction Activity	
II.3	Maintain a supply of erosion control materials onsite so that one can quickly respond to unanticipated storm events or emergencies.	During Construction	
II.4	Minimize temporary stockpiling of excavated material by maximizing the use of end hauling.	During Construction	
11.5	Use erosion controls to protect and stabilize stockpiles and exposed soils to prevent movement of materials. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles or silt fences or berms of hay bales to minimize movement of exposed or stockpiled soils.	During Construction	
11.6	Stockpile excavated materials in areas where it cannot enter the stream channel. Prior to start of construction pre-determine if such sites are available at or near the project location. If unavailable determine location where end hauled material will be deposited. If feasible, conserve topsoil for reuse at project location or use in other areas.	Pre, During & Post Any Construction Activity	
11.7	When needed, utilize in-stream grade control structures to control channel scour, sediment routing, and headwall cutting	During & Post Any Construction Activity	
11.8	Immediately after project completion and before October 15 th , stabilize all exposed soil with mulch, seeding, or placement of erosion control blankets	Post Any Construction Activity	
11.9.	If project construction continues after October 15 th , disturbed soils should not be left exposed overnight. Contractors should obtain at least daily weather forecasts and be prepared to cease work and stabilize construction site prior to forecasted storms.	During Construction	
III.	MEASURES TO MINIMIZE IMPACTS TO AQUATIC HABITAT AND SPECIES DURING DEWATERING OF PROJECT SITE		
III.1	Prior to dewatering, on a site-specific basis, determine the best means to bypass flow through work area that minimizes disturbance to channel and avoids direct mortality of fish and other aquatic vertebrates.	Prior dewatering and any construction activity	
III.2	Coordinate project site dewatering with a fisheries biologist qualified to perform fish relocation activities.	Prior dewatering and any construction activity	
III.3	Minimize the length of dewatered stream channel and duration of dewatering.	Prior dewatering and any construction activity	
III.4	Bypass stream flow around work area, but maintain stream flow to channel below construction site.	Prior dewatering and any construction activity	
III.5	When installing bridges or open-bottom arches set on concrete footings, the	During Construction	

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
	work area must often be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree, or stake in place to prevent movement by vibration. Refuel in area well away from stream channel and place fuel absorbent mats under pump while refueling. Pump intakes should be covered with 1/8" mesh to prevent entrainment of fish or amphibians. Check intake periodically for impingement of fish or amphibians.		
III.6	Discharge waste water from construction area to an upland location where it will not drain sediment-laden water back to stream channel.	During Construction	
IV.	MEASURES TO MINIMIZE INJURY AND MORTALITY OF FISH AND AMPHIBIAN SPECIES DURING DEWATERING		
IV.1	All fish relocation activities must be performed only by a qualified fisheries biologist	Prior dewatering and any construction activity	
IV.2	If in regions of CA with high summer air temperatures, perform relocation activities during morning periods.	Prior dewatering and any construction activity	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.3	Periodically measure air and water temperatures. Cease activities when water temperatures exceed 65-68°F.	During aquatic species relocation efforts	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.4	Qualified biologist must contact NMFS prior to capture and relocation of fish.	Prior to any aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.5	Exclude fish from re-entering work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh should be no greater than 1/8". It is vital to completely secure bottom edge of net or screen to channel bed to prevent fish from re-entering work area. Exclusion fencing should be placed in areas of low water velocity to minimize impingement of fish. Screens should be checked periodically and cleaned of debris to permit free flow of water.	Prior to aquatic species relocation efforts and dewatering	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.6	Prior to capturing fish, determine most appropriate release location(s). Consider the following when selecting release site(s): similar water temperature as capture location, ample space for captured fish, low likelihood of fish re-entering work site or becoming impinged on exclusion fencing.	Prior to aquatic species relocation efforts and dewatering	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.7	On a site-specific basis, determine the most efficient means for capturing fish. Complex stream habitat generally requires the use of electrofishing gear, whereas in outlet pools, fish may be concentrated by pumping-down pool and then captured by seining or dip-netting.	Prior to aquatic species relocation efforts and dewatering	Mendocino County DOT and Fisheries Biologist conducting relocation

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
IV.8	If electrofishing equipment is utilized, minimize mortality by starting with unit at low settings and gradually increase settings until fish are immobilized for capture, yet readily recover when placed in buckets or the charge is ceased. Record all settings tried.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.9	Minimize handling of salmonids. However, when handling is necessary, always wet hands or nets prior to touching fish.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.10	Temporarily hold fish in cool, shaded, aerated water in a container of dark color with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.11	Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.12	Avoid overcrowding in containers. Have at least two containers and segregate young-of-year (y-o-y) fish from larger age-classes to avoid predation. Place larger amphibians, such as Pacific giant salamanders, in container with larger fish.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.13	If fish are abundant, periodically cease capture and release fish at pre-determined locations.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.14	Visually identify species and estimate year-classes of fish at time of release. Do not attempt to anesthetize and/or measure fish.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.15	Submit reports of fish relocation activities to appropriate agencies in a timely fashion. NMFS generally requires these reports within five working days of capture and release.	Post aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.16	If feasible, plan on performing initial fish relocation efforts several days prior to the start of construction. This provides the qualified fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes prior to construction. In many instances, additional fish will be captured that eluded the previous day's efforts.	Prior to aquatic species relocation efforts and dewatering	Mendocino County DOT and Fisheries Biologist conducting relocation
IV.17	If the fisheries biologist is unable to be onsite during construction period, personnel from the construction crew should be informed to look for, and relocate fish and amphibians from the construction area. Provide the construction crew with a dipnet, bucket, and notebook. Show them the appropriate release site and have them record any fish they relocate.	During Construction	
IV.18	Retain all mortalities and freeze in water. In some instances, the permitting	During aquatic species	Mendocino County DOT and

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
	agencies may require that mortalities are handed over to them.	relocation and Construction	Fisheries Biologist conducting relocation
IV.19	If mortality during relocation exceeds 5%, stop efforts and immediately contact the appropriate agencies.	During aquatic species relocation	Mendocino County DOT and Fisheries Biologist conducting relocation
V.	GUIDANCE TO MINIMIZE IMPACTS TO RIPARIAN VEGETATION DURING STREAM CROSSING REMEDIATION CONSTRUCTION		
V.1	Prior to construction, determine locations and equipment access points that minimize riparian disturbance without affecting less stable areas.	Prior To Construction Activity	
V.2	Retain as much trees and under-story brush as feasible, emphasizing shade-producing and bank-stabilizing vegetation.	Prior, During & After Construction Activity	
V.3	Minimize soil compaction by using equipment with either a greater reach or that exerts less pressure per square inch on the ground – resulting in either less overall area disturbed or less compaction of disturbed areas.	Prior, During & After Construction Activity	
V.4	If riparian vegetation is to be removed with chainsaws, utilize saws currently available that operate with vegetable-based bar oil.	Prior, During & After Construction Activity	
V.5	Decompact disturbed soils at project completion as the heavy equipments exits the construction area.	After Construction Activity	
V.6	Revegetate disturbed and decompacted areas, preferably with native species specific to the project location that comprise a diverse community of woody and herbaceous species.	After Construction Activity	
VI.	GUIDANCE TO MINIMIZE IMPACTS TO BIRDS DURING STREAM CROSSING REMEDIATION CONSTRUCTION		
VI.1	Forest edges adjacent to the culvert replacement site should be protected with construction fencing. No disturbance, parking, or equipment storage should be allowed within the fenced areas.	Prior To & During Construction Activity	
VI.2	Construction plans should clearly indicate the area of potential effect and note adjacent areas as non-disturbance areas to be fenced according to measure 1, above. In the event that in channel trees (red alder) are to be removed, they should be clearly marked on plans and flagged at the site prior to construction.	Prior To Construction Activity	

Exhibit 5: Mitigation Monitoring and Reporting Plan (Ryan Creek)

2. MITIGATION MEASURE MONITORING & REPORTING

Monitoring will be performed by the Mendocino County Department of Transportation (DOT) staff that is overseeing the project's construction. Staff will ensure implementation of the mitigation measures.

Monitoring of each respective mitigation measure will be initiated according to the project phase listed in the table above under "Timing." Monitoring will consist of an initial compliance check as each mitigation measure is implemented and will further include ongoing compliance checks as appropriate or necessary to ensure that the mitigation measures are successful.